2000, and incorporated herein by reference in its entirety. The synchronization source device then distributes synchronization symbols at a periodic rate based on that received from the external synchronization source (such as 8 kHz) out each of its LMAC-compatible interfaces. The LMACs reside on switching card 38 in Fig. 3. The switching card is described in detail later in this specification. Though the LMACs collect information on synchronization symbols received from other devices in the virtual network in its registers (again described later in this specification), the software application managing synchronization distribution running on the CPU 46 on the switching card (shown in Fig. 6) ignores this information as it is irrelevant to the overall synchronization of the virtual network.

IN THE CLAIMS

Please cancel Claims 1 and 2 and add the following Claims 3-21 as follows:

3. (New) A method performed in a communications network, said communications network comprising nodes, at least one of said nodes transmitting a data frame on said network, a first one of said nodes generating a control signal and transmitting said control signal on said network to at least a second one of said nodes during a transmission of said data frame on said network, said method comprising:

receiving, by said second one of said nodes, said control signal after receiving only a portion of said data frame; and

performing, by said second one of said nodes, an action required by said control signal prior to waiting until said data frame has been fully received.

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4. (New) The method of Claim 3 wherein said transmitting said control signal comprises transmitting a master clock signal, said method further comprising:

generating local clock signals by a local clock in said second one of said nodes, wherein said performing an action comprises:

correcting any timing error in said local clock based on the time that said master clock signal was received by said second node after receiving only a portion of said data frame so that timing jitter is limited to less than a data frame period.

5. (New) The method of Claim 4 wherein said master clock signal is an 8KHz clock.

6. (New) The method of Claim 5 wherein said 8KHz clock is a Global Positioning System (GPS) clock.

7. (New) The method of Claim 3 wherein said data frame is transmitted in accordance with an Ethernet protocol.

8. (New) The method of Claim 3 wherein said control signal is an 8B/10B encoded control character.

9. (New) The method of Claim 3 wherein said data frame is a packet.

10. (New) The method of Claim 3 wherein said control signal is a master clock signal.

11. (New) The method of Claim 3 wherein said performing an action comprises performing in action by a media access controller (MAC).

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12. (New) The method of Claim 3 wherein said control signal is a master clock signal, and wherein said performing an action comprises taking steps to correct a timing error between a local clock in said second one of said nodes and said master clock signal.

13. (New) The method of Claim 12 wherein said local clock outputs signals at 125 MHz.

14. (New) The method of Claim 12 wherein said control signal is an 8B/10B encoded character, and wherein said timing error is corrected so that a clock jitter in said second one of said nodes is approximately the period of said 8B/10B encoded character.

15. (New) The method of Claim 3 wherein said performing an action comprises synchronizing a local clock in said second one of said nodes with said control signal.

16. (New) A method performed in a communications network for synchronizing nodes in said network, a first one of said nodes, acting as a source node, periodically generating synchronization signals and broadcasting said synchronization signals on said network, said method comprising:

creating, by a second one of said nodes, a network topology map corresponding to relative locations of nodes within said network;

receiving, by said second one of said nodes, a notice from said source node that said source node is the broadcaster of said synchronization signal;

automatically selecting, by said second one of said nodes, an interface with a neighboring node from which to accept said synchronization signals based on certain cost criteria; and

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automatically accepting said synchronization signals at said interface with said neighboring node.

17. (New) The method of Claim 16 wherein said cost criteria is the least number of node hops from said second one of said nodes to said source node.

18. (New) The method of Claim 16 wherein said creating a network topology map occurs when said second one of said nodes is inserted into said network.

19. (New) A method performed in a communications network, said communications network comprising nodes, a first node transmitting a data frame on said network, said method comprising:

receiving, by a second node, at least a portion of said data frame; and

transmitting to said first node, by said second node, a receive-buffer-full code, indicating to said first node that a receive buffer in said second node is substantially full and to stop transmitting data to said second node.

20. (New) The method of Claim 19 further comprising transmitting a receive-buffer-available code by said second node to said first node indicating that said receive buffer is available to receive additional data.

21. (New) A method performed in a communications network, said communications network comprising nodes, said method comprising:

transmitting on said network a first signal by a first node to a second node;

receiving said first signal by said second node;

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